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EXAMINER	
THANGAVELU, KANDASAMY	
ART UNIT	PAPER NUMBER
2123	9

DATE MAILED: 08/12/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

PPL

Office Action Summary	Application No.	Applicant(s)	
	09/510,053	NIXON ET AL.	
	Examiner	Art Unit	
	Kandasamy Thangavelu	2123	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *09 July 2003* .

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-21* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-21* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *22 February 2000* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) *8* .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Introduction

1. This communication is in response to the Applicants' Response mailed on July 9, 2003. Claims 1-21 of the application are pending.

Response to Arguments

2. Applicants' arguments filed on July 9, 2003 have been fully considered. Applicants' arguments, filed on July 9, 2003 under 35 U.S.C. 103 (a) are not persuasive. Therefore, this office action is made final.

Information Disclosure Statement

3. Acknowledgment is made of the information disclosure statement filed on July 9, 2003.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains.

5. The factual inquiries set forth in Graham v. John Deere Co., 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

6. Claims 1-9 and 12-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Santoline et al. (SA)** (PCT WO 97/38362) in view of **Bowling (BO)** (PCT WO 97/45778).

6.1 **SA** teaches a stimulated simulator for a distributed process control system. Specifically, as per claim 1, **SA** teaches an apparatus adapted to be used with a distributed process control system having a user workstation remotely located from a distributed controller that controls one or more field devices using control modules (Fig. 1; Page 1, Lines 2-3; Page 1, Lines 9-13 and Page 6, Lines 10-12); the apparatus comprising:

a computer having a memory and a processing unit (Page 6, Lines 10-12); and

the controller application is further adapted to be executed on the distributed controller to implement one of the control modules during operation of the distributed process control system (Page 1, Lines 9-13).

SA does not expressly teach a configuration application stored in the memory of the computer and adapted to be executed on the processing unit of the computer. **BO** teaches a

configuration application stored in the memory of the computer and adapted to be executed on the processing unit of the computer (Page 2, Para 2), as that facilitates the design and test of a part or the overall control of the industrial plant (Page 2, Para 2) and design, test and verification of various control system strategies in a comprehensive manner (Page 4, Para 3). It would have been obvious to one of ordinary skill in the art at the time of Applicants' invention to modify the apparatus of **SA** with the apparatus of **BO** that included a configuration application stored in the memory of the computer and adapted to be executed on the processing unit of the computer, as that would facilitate the design and test of a part or the overall control of the industrial plant and design, test and verification of various control system strategies in a comprehensive manner.

SA does not expressly teach that the configuration application is capable of being executed on the user workstation to create control modules for execution by the distributed controller. **BO** teaches that the configuration application is capable of being executed on the user workstation to create control modules for execution by the distributed controller (Abstract), as that facilitates the design, test and verification of various control system strategies in a comprehensive manner (Abstract). It would have been obvious to one of ordinary skill in the art at the time of Applicants' invention to modify the apparatus of **SA** with the apparatus of **BO** that included the configuration application capable of being executed on the user workstation to create control modules for execution by the distributed controller, as that would facilitate the design, test and verification of various control system strategies in a comprehensive manner.

SA does not expressly teach a controller application stored in the memory of the computer and adapted to be executed on the processing unit of the computer. **BO** teaches a controller application stored in the memory of the computer and adapted to be executed on the

processing unit of the computer (Page 2, Para 3), as that facilitates the design and test of a part or the overall control of the industrial plant (Page 2, Para 2) and design, test and verification of various control system strategies in a comprehensive manner (Page 4, Para 3). It would have been obvious to one of ordinary skill in the art at the time of Applicants' invention to modify the apparatus of **SA** with the apparatus of **BO** that included a controller application stored in the memory of the computer and adapted to be executed on the processing unit of the computer, as that would facilitate the design and test of a part or the overall control of the industrial plant and design, test and verification of various control system strategies in a comprehensive manner.

SA does not expressly teach that the configuration application, when executed on the computer, is further adapted to create a first control module capable of being used by the distributed controller within the distributed process control system. **BO** teaches that the configuration application, when executed on the computer, is further adapted to create a first control module capable of being used by the distributed controller within the distributed process control system (Abstract), as that facilitates the design, test and verification of various control system strategies in a comprehensive manner (Abstract). It would have been obvious to one of ordinary skill in the art at the time of Applicants' invention to modify the apparatus of **SA** with the apparatus of **BO** that included the configuration application that when executed on the computer, is further adapted to create a first control module capable of being used by the distributed controller within the distributed process control system, as that would facilitate the design, test and verification of various control system strategies in a comprehensive manner.

SA does not expressly teach that the controller application is adapted to cause execution of the first control module within the computer to simulate operation of the distributed process

control system. **BO** teaches that the controller application is adapted to cause execution of the first control module within the computer to simulate operation of the distributed process control system (Page 2, Para 3; Page 4, Para 2), as that facilitates the design and test of a part or the overall control of the industrial plant (Page 2, Para 2) and allows the actual device control software to operate at a rate slower or faster than real time and provides the capability to arbitrarily stop and start the controller software's operation (Page 4, Para 2). It would have been obvious to one of ordinary skill in the art at the time of Applicants' invention to modify the apparatus of **SA** with the apparatus of **BO** that included the controller application adapted to cause execution of the first control module within the computer to simulate operation of the distributed process control system, as that would facilitate the design and test of a part or the overall control of the industrial plant and would allow the actual device control software to operate at a rate slower or faster than real time and provide the capability to arbitrarily stop and start the controller software's operation.

6.2 As per Claim 2, **SA** and **BO** teach the apparatus of claim 1. **SA** does not expressly teach that the configuration application is adapted to create a user interface for use in displaying information to a user, and further includes a viewing application stored in the memory of the computer and adapted to be executed on the processing unit of the computer, wherein the viewing application is adapted to use the user interface to display information pertaining to the first control module to a user. **BO** teaches that the configuration application is adapted to create a user interface for use in displaying information to a user, and further includes a viewing application stored in the memory of the computer and adapted to be executed on the processing

unit of the computer, wherein the viewing application is adapted to use the user interface to display information pertaining to the first control module to a user (Page 7, Para 5; Page 1, Para 2; Page 9, Para 3), as that provides an operator interface through which the simulation conditions and the device controller can be monitored and controlled (Page 1, Para 2; Page 9, Para 3). It would have been obvious to one of ordinary skill in the art at the time of Applicants' invention to modify the apparatus of **SA** with the apparatus of **BO** that included the configuration application adapted to create a user interface for use in displaying information to a user, and further included a viewing application stored in the memory of the computer and adapted to be executed on the processing unit of the computer, wherein the viewing application was adapted to use the user interface to display information pertaining to the first control module to a user, as that would provide an operator interface through which the simulation conditions and the device controller can be monitored and controlled.

6.3 As per Claim 3, **SA** and **BO** teach the apparatus of claim 1. **SA** does not expressly teach that the apparatus further includes a configuration database application stored in the memory of the computer and adapted to be executed on the processing unit of the computer, wherein the configuration database application is adapted to communicate with the controller application within the computer to manage a configuration database. **BO** teaches that the apparatus further includes a configuration database application stored in the memory of the computer and adapted to be executed on the processing unit of the computer, wherein the configuration database application is adapted to communicate with the controller application within the computer to manage a configuration database (Page 3, Para 2; Page 6, Para 3 to Page 7, Para 1), as that would

allow the simulation unit to read/write configuration data readable by the control software to implement various control processes (Page 6, Para 3 to Page 7, Para 1). It would have been obvious to one of ordinary skill in the art at the time of Applicants' invention to modify the apparatus of **SA** with the apparatus of **BO** that included the apparatus further including a configuration database application stored in the memory of the computer and adapted to be executed on the processing unit of the computer, wherein the configuration database application was adapted to communicate with the controller application within the computer to manage a configuration database, as that would allow the simulation unit to read/write configuration data readable by the control software to implement various control processes.

6.4 As per Claim 4, **SA** and **BO** teach the apparatus of claim 1. **SA** teaches that the controller application includes an execution rate parameter specifying the rate of execution of the first control module within the computer (Page 2, Lines 3-8; Page 8, Lines 23-25 and Page 9, Lines 16-17).

6.5 As per Claim 5, **SA** and **BO** teach the apparatus of claim 4. **SA** does not expressly teach that the execution rate parameter can be set to be greater than or less than a real time execution rate of the first control module when the first control module is executed within the distributed controller of the distributed process control system. **BO** teaches that the execution rate parameter can be set to be greater than or less than a real time execution rate of the first control module when the first control module is executed within the distributed controller of the distributed process control system (Page 2, Para 2), as that would allow the design, test and

verification of control system strategies in a more comprehensive manner (Page 4, Para 3). It would have been obvious to one of ordinary skill in the art at the time of Applicants' invention to modify the apparatus of **SA** with the apparatus of **BO** that included the execution rate parameter to be set to be greater than or less than a real time execution rate of the first control module when the first control module was executed within the distributed controller of the distributed process control system, as that would allow the design, test and verification of control system strategies in a more comprehensive manner.

6.6 As per Claim 6, **SA** and **BO** teach the apparatus of claim 1. **SA** does not expressly teach that the configuration application is adapted to create a control module capable of being executed within the distributed controller during operation of the distributed process control system. **BO** teaches that the configuration application is adapted to create a control module capable of being executed within the distributed controller during operation of the distributed process control system (Abstract), as that facilitates the design, test and verification of various control system strategies in a comprehensive manner (Abstract). It would have been obvious to one of ordinary skill in the art at the time of Applicants' invention to modify the apparatus of **SA** with the apparatus of **BO** that included the configuration application adapted to create a control module capable of being executed within the distributed controller during operation of the distributed process control system, as that would facilitate the design, test and verification of various control system strategies in a comprehensive manner.

6.7 As per Claim 7, **SA** and **BO** teach the apparatus of claim 1. **SA** does not expressly teach that the configuration application is adapted to create a control module capable of being executed within one of the field devices communicatively connected to the distributed controller during the operation of the distributed process control system. **BO** teaches the configuration application is adapted to create a control module capable of being executed within one of the field devices communicatively connected to the distributed controller during the operation of the distributed process control system (Abstract), as that facilitates the design, test and verification of various control system strategies in a comprehensive manner (Abstract). It would have been obvious to one of ordinary skill in the art at the time of Applicants' invention to modify the apparatus of **SA** with the apparatus of **BO** that included the configuration application adapted to create a control module capable of being executed within one of the field devices communicatively connected to the distributed controller during the operation of the distributed process control system, as that would facilitate the design, test and verification of various control system strategies in a comprehensive manner.

6.8 As per Claim 8, **SA** and **BO** teach the apparatus of claim 1. **SA** does not expressly teach a simulation application stored in the memory of the computer and adapted to be executed on the processing unit of the computer, wherein the simulation application is adapted to communicate with the controller application within the computer to simulate the operation of the distributed process control system. **BO** teaches a simulation application stored in the memory of the computer and adapted to be executed on the processing unit of the computer, wherein the simulation application is adapted to communicate with the controller application within the

computer to simulate the operation of the distributed process control system (Page 2, Para 3; Page 4, Para 2), as that facilitates the design and test of a part or the overall control of the industrial plant (Page 2, Para 2) and allows the actual device control software to operate at a rate slower or faster than real time and provides the capability to arbitrarily stop and start the controller software's operation (Page 4, Para 2). It would have been obvious to one of ordinary skill in the art at the time of Applicants' invention to modify the apparatus of **SA** with the apparatus of **BO** that included a simulation application stored in the memory of the computer and adapted to be executed on the processing unit of the computer, wherein the simulation application is adapted to communicate with the controller application within the computer to simulate the operation of the distributed process control system, as that would facilitate the design and test of a part or the overall control of the industrial plant and would allow the actual device control software to operate at a rate slower or faster than real time and provide the capability to arbitrarily stop and start the controller software's operation.

6.9 As per Claim 9, **SA** and **BO** teach the apparatus of claim 1. **SA** teaches that the controller application is adapted to communicate with the field devices through an input/output device when the controller application is executed within the distributed controller (Page 1, Lines 9-13; Page 3, Lines 27-33).

6.10 As per claim 12, **SA** teaches a method of simulating a distributed process control system having a user workstation remotely located from a distributed controller which controls one or

more field devices using control modules (Fig. 1; Page 1, Lines 2-3; Page 1, Lines 9-13 and Page 6, Lines 10-12); and

the distributed controller is adapted to store and execute a controller application to control a process using the control modules during operation of the distributed process control system (Page 1, Lines 9-13).

SA does not expressly teach that the user workstation is adapted to store and execute a configuration application used to create the control modules for execution by the distributed controller. **BO** teaches that the user workstation is adapted to store and execute a configuration application used to create the control modules for execution by the distributed controller (Abstract), as that facilitates the design, test and verification of various control system strategies in a comprehensive manner (Abstract). It would have been obvious to one of ordinary skill in the art at the time of Applicants' invention to modify the method of **SA** with the method of **BO** that included the user workstation adapted to store and execute a configuration application used to create the control modules for execution by the distributed controller, as that would facilitate the design, test and verification of various control system strategies in a comprehensive manner.

SA does not expressly teach the method comprising the step of storing the configuration application in a first computer having a memory and a processing unit. **BO** teaches the method comprising the step of storing the configuration application in a first computer having a memory and a processing unit (Page 2, Para 2), as that facilitates the design and test of a part or the overall control of the industrial plant (Page 2, Para 2) and design, test and verification of various control system strategies in a comprehensive manner (Page 4, Para 3). It would have been obvious to one of ordinary skill in the art at the time of Applicants' invention to modify the

method of **SA** with the method of **BO** that included the method comprising the step of storing the configuration application in a first computer having a memory and a processing unit, as that would facilitate the design and test of a part or the overall control of the industrial plant and design, test and verification of various control system strategies in a comprehensive manner.

SA does not expressly teach storing the controller application in the memory of the first computer. **BO** teaches storing the controller application in the memory of the first computer (Page 2, Para 3), as that facilitates the design and test of a part or the overall control of the industrial plant (Page 2, Para 2) and design, test and verification of various control system strategies in a comprehensive manner (Page 4, Para 3). It would have been obvious to one of ordinary skill in the art at the time of Applicants' invention to modify the method of **SA** with the method of **BO** that included storing the controller application in the memory of the first computer, as that would facilitate the design and test of a part or the overall control of the industrial plant and design, test and verification of various control system strategies in a comprehensive manner.

SA does not expressly teach executing the configuration application on the first computer to create a first control module adapted to be used by the distributed controller within the distributed process control system. **BO** teaches executing the configuration application on the first computer to create a first control module adapted to be used by the distributed controller within the distributed process control system (Abstract), as that facilitates the design, test and verification of various control system strategies in a comprehensive manner (Abstract). It would have been obvious to one of ordinary skill in the art at the time of Applicants' invention to modify the method of **SA** with the method of **BO** that included executing the configuration

application on the first computer to create a first control module adapted to be used by the distributed controller within the distributed process control system, as that would facilitate the design, test and verification of various control system strategies in a comprehensive manner.

SA does not expressly teach executing the controller application on the first computer to cause execution of the first control module within the first computer to thereby simulate operation of the distributed process control system. **BO** teaches executing the controller application on the first computer to cause execution of the first control module within the first computer to thereby simulate operation of the distributed process control system (Page 2, Para 3; Page 4, Para 2), as that facilitates the design and test of a part or the overall control of the industrial plant (Page 2, Para 2) and allows the actual device control software to operate at a rate slower or faster than real time and provides the capability to arbitrarily stop and start the controller software's operation (Page 4, Para 2). It would have been obvious to one of ordinary skill in the art at the time of Applicants' invention to modify the method of **SA** with the method of **BO** that included executing the controller application on the first computer to cause execution of the first control module within the first computer to thereby simulate operation of the distributed process control system, as that would facilitate the design and test of a part or the overall control of the industrial plant and would allow the actual device control software to operate at a rate slower or faster than real time and provide the capability to arbitrarily stop and start the controller software's operation.

6.11 As per Claim 13, **SA** and **BO** teach the method of claim 12. **SA** does not expressly teach the steps of executing the configuration application to create a user interface for use in displaying

information to a user, storing a viewing application in the memory of the first computer and executing the viewing application on the first computer to display information pertaining to the first control module to a user on a display associated with the first computer using the user interface. **BO** teaches the steps of executing the configuration application to create a user interface for use in displaying information to a user, storing a viewing application in the memory of the first computer and executing the viewing application on the first computer to display information pertaining to the first control module to a user on a display associated with the first computer using the user interface (Page 7, Para 5; Page 1, Para 2; Page 9, Para 3), as that provides an operator interface through which the simulation conditions and the device controller can be monitored and controlled (Page 1, Para 2; Page 9, Para 3). It would have been obvious to one of ordinary skill in the art at the time of Applicants' invention to modify the method of **SA** with the method of **BO** that included the steps of executing the configuration application to create a user interface for use in displaying information to a user, storing a viewing application in the memory of the first computer and executing the viewing application on the first computer to display information pertaining to the first control module to a user on a display associated with the first computer using the user interface, as that would provide an operator interface through which the plant conditions and the device controller can be monitored and controlled.

6.12 As per Claim 14, **SA** and **BO** teach the method of claim 12. **SA** does not expressly teach the steps of storing a configuration database application in the memory of the first computer and executing the configuration database application on the first computer so that the configuration database application communicates with the controller application within the first computer to

manage a configuration database. **BO** teaches the steps of storing a configuration database application in the memory of the first computer and executing the configuration database application on the first computer so that the configuration database application communicates with the controller application within the first computer to manage a configuration database (Page 3, Para 2; Page 6, Para 3 to Page 7, Para 1), as that would allow the simulation unit to read/write configuration data readable by the control software to implement various control processes (Page 6, Para 3 to Page 7, Para 1). It would have been obvious to one of ordinary skill in the art at the time of Applicants' invention to modify the method of **SA** with the method of **BO** that included the steps of storing a configuration database application in the memory of the first computer and executing the configuration database application on the first computer so that the configuration database application communicates with the controller application within the first computer to manage a configuration database, as that would allow the simulation unit to read/write configuration data readable by the control software to implement various control processes.

6.13 As per Claim 15, **SA** and **BO** teach the method of claim 12. **SA** teaches that the step of executing the controller application includes the step of specifying an execution rate for the first control module when executing the first control module within the first computer (Page 2, Lines 3-8; Page 8, Lines 23-25 and Page 9, Lines 16-17).

6.14 As per Claim 16, **SA** and **BO** teach the method of claim 15. **SA** does not expressly teach that the step of executing the controller application includes the step of executing the first control

module at an execution rate that is greater than or less than a real time execution rate of the first control module when the first control module is executed within the distributed controller of the distributed process control system. **BO** teaches that the step of executing the controller application includes the step of executing the first control module at an execution rate that is greater than or less than a real time execution rate of the first control module when the first control module is executed within the distributed controller of the distributed process control system (Page 2, Para 2), as that would allow the design, test and verification of control system strategies in a more comprehensive manner (Page 4, Para 3). It would have been obvious to one of ordinary skill in the art at the time of Applicants' invention to modify the method of **SA** with the method of **BO** that included the step of executing the controller application including the step of executing the first control module at an execution rate that is greater than or less than a real time execution rate of the first control module when the first control module is executed within the distributed controller of the distributed process control system, as that would allow the design, test and verification of control system strategies in a more comprehensive manner.

6.15 As per Claim 17, **SA** and **BO** teach the method of claim 12. **SA** does not expressly teach that the step of executing the configuration application includes the step of creating a control module capable of being executed within one of the field devices communicatively connected to the distributed controller during the operation of the distributed process control system. **BO** teaches that the step of executing the configuration application includes the step of creating a control module capable of being executed within one of the field devices communicatively connected to the distributed controller during the operation of the distributed process control

system (Abstract), as that facilitates the design, test and verification of various control system strategies in a comprehensive manner (Abstract). It would have been obvious to one of ordinary skill in the art at the time of Applicants' invention to modify the method of **SA** with the method of **BO** that included the step of executing the configuration application including the step of creating a control module capable of being executed within one of the field devices communicatively connected to the distributed controller during the operation of the distributed process control system, as that would facilitate the design, test and verification of various control system strategies in a comprehensive manner.

6.16 As per Claim 18, **SA** and **BO** teach the method of claim 12. **SA** does not expressly teach the steps of storing a simulation application in the memory of the first computer and executing the simulation application on the first computer to communicate with the controller application within the first computer to simulate the operation of the distributed process control system. **BO** teaches the steps of storing a simulation application in the memory of the first computer and executing the simulation application on the first computer to communicate with the controller application within the first computer to simulate the operation of the distributed process control system (Page 2, Para 3; Page 4, Para 2), as that facilitates the design and test of a part or the overall control of the industrial plant (Page 2, Para 2) and allows the actual device control software to operate at a rate slower or faster than real time and provides the capability to arbitrarily stop and start the controller software's operation (Page 4, Para 2). It would have been obvious to one of ordinary skill in the art at the time of Applicants' invention to modify the method of **SA** with the method of **BO** that included the steps of storing a simulation application

in the memory of the first computer and executing the simulation application on the first computer to communicate with the controller application within the first computer to simulate the operation of the distributed process control system, as that would facilitate the design and test of a part or the overall control of the industrial plant and would allow the actual device control software to operate at a rate slower or faster than real time and provide the capability to arbitrarily stop and start the controller software's operation.

7. Claims 10, 11 and 19-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Santoline et al. (SA)** (PCT WO 97/38362) in view of **Bowling (BO)** (PCT WO 97/45778), and further in view of **Brown et al. (BR)** (U.S. Patent 6, 377,859).

7.1 As per Claim 10, **SA** and **BO** teach the apparatus of claim 1. **SA** and **BO** do not expressly teach that the controller application is capable of communicating with a further controller that is of a different type than the distributed controller of the distributed process control system. **BR** teaches that the controller application is capable of communicating with a further controller that is of a different type than the distributed controller of the distributed process control system (Col 2, Lines 14-25), as that allows devices made by different manufacturers to interoperate and the process control industry to decentralize process control and simplify the distributed control systems (Col 2, Lines 1- 14; Lines 14-25). It would have been obvious to one of ordinary skill in the art at the time of Applicants' invention to modify the apparatus of **SA** and **BO** with the apparatus of **BR** that included the controller application capable of communicating with a further controller that was of a different type than the

distributed controller of the distributed process control system, as that would allow devices made by different manufacturers to interoperate and the process control industry to decentralize process control and simplify the distributed control systems.

7.2 As per Claim 11, **SA, BO** and **BR** teach the apparatus of claim 10. **SA** and **BR** do not expressly teach a viewing application stored in the memory of the computer and adapted to be executed on the processing unit of the computer, wherein the viewing application is adapted to communicate with the controller application and to use a user interface to display information sent from the further controller. **BO** teaches a viewing application stored in the memory of the computer and adapted to be executed on the processing unit of the computer, wherein the viewing application is adapted to communicate with the controller application and to use a user interface to display information sent from the further controller (Page 7, Para 5; Page 1, Para 2; Page 9, Para 3), as that provides an operator interface through which the simulation conditions and the device controller can be monitored and controlled (Page 1, Para 2; Page 9, Para 3). It would have been obvious to one of ordinary skill in the art at the time of Applicants' invention to modify the apparatus of **SA** and **BR** with the apparatus of **BO** that included a viewing application stored in the memory of the computer and adapted to be executed on the processing unit of the computer, wherein the viewing application is adapted to communicate with the controller application and to use a user interface to display information sent from the further controller, as that would provide an operator interface through which the simulation conditions and the device controller can be monitored and controlled.

7.2 As per Claim 19, **SA** teaches an apparatus adapted to be used in conjunction with a distributed process control system having a user workstation remotely located from a distributed controller that controls one or more field devices using control modules (Fig. 1; Page 1, Lines 2-3; Page 1, Lines 9-13 and Page 6, Lines 10-12); the apparatus comprising:

a computer having a memory and a processing unit and a display connected to the computer (Fig. 1, Item 21; Page 6, Lines 10-12); and

the controller application is adapted to be executed on the distributed controller to implement a control module during operation of the distributed process control system (Page 1, Lines 9-13).

SA does not expressly teach a controller application stored in the memory of the computer and adapted to be executed on the processing unit of the computer. **BO** teaches a controller application stored in the memory of the computer and adapted to be executed on the processing unit of the computer (Page 2, Para 3), as that facilitates the design and test of a part or the overall control of the industrial plant (Page 2, Para 2) and design, test and verification of various control system strategies in a comprehensive manner (Page 4, Para 3). It would have been obvious to one of ordinary skill in the art at the time of Applicants' invention to modify the apparatus of **SA** with the apparatus of **BO** that included a controller application stored in the memory of the computer and adapted to be executed on the processing unit of the computer, as that would facilitate the design and test of a part or the overall control of the industrial plant and design, test and verification of various control system strategies in a comprehensive manner.

SA and **BO** do not expressly teach that the controller application is capable of communicating with a further controller that is of a different type than the distributed controller

of the distributed process control system. **BR** teaches that the controller application is capable of communicating with a further controller that is of a different type than the distributed controller of the distributed process control system (Col 2, Lines 14-25), as that allows devices made by different manufacturers to interoperate and the process control industry to decentralize process control and simplify the distributed control systems (Col 2, Lines 1- 14; Lines 14-25). It would have been obvious to one of ordinary skill in the art at the time of Applicants' invention to modify the apparatus of **SA** and **BO** with the apparatus of **BR** that included the controller application capable of communicating with a further controller that was of a different type than the distributed controller of the distributed process control system, as that would allow devices made by different manufacturers to interoperate and the process control industry to decentralize process control and simplify the distributed control systems.

SA and **BR** do not expressly teach a viewing application stored in the memory of the computer and adapted to be executed on the processing unit of the computer, wherein the viewing application is adapted to communicate with the controller application and to use the display to display information sent from the further controller. **BO** teaches a viewing application stored in the memory of the computer and adapted to be executed on the processing unit of the computer, wherein the viewing application is adapted to communicate with the controller application and to use the display to display information sent from the further controller (Page 7, Para 5; Page 1, Para 2; Page 9, Para 3), as that provides an operator interface through which the simulation conditions and the device controller can be monitored and controlled (Page 1, Para 2; Page 9, Para 3). It would have been obvious to one of ordinary skill in the art at the time of Applicants' invention to modify the apparatus of **SA** and **BR** with the apparatus of **BO** that

included teaches a viewing application stored in the memory of the computer and adapted to be executed on the processing unit of the computer, wherein the viewing application is adapted to communicate with the controller application and to use the display to display information sent from the further controller, as that would provide an operator interface through which the simulation conditions and the device controller can be monitored and controlled.

7.3 As per Claim 20, **SA, BO** and **BR** teach the apparatus of claim 19. **SA** and **BO** do not expressly teach the apparatus further including an interface connected between the further controller and the controller application. **BR** teaches the apparatus further including an interface connected between the further controller and the controller application (Col 2, Lines 14-25), as that allows devices made by different manufacturers to communicate with one another and interoperate to effect decentralized control within a process (Col 2, Lines 1- 14; Lines 14-25). It would have been obvious to one of ordinary skill in the art at the time of Applicants' invention to modify the apparatus of **SA** and **BO** with the apparatus of **BR** that included the apparatus further including an interface connected between the further controller and the controller application, as that would allow devices made by different manufacturers to communicate with one another and interoperate to effect decentralized control within a process.

7.4 As per Claim 21, **SA, BO** and **BR** teach the apparatus of claim 20. **SA** and **BO** do not expressly teach the apparatus wherein the interface is an OPC interface. **BR** teaches the apparatus wherein the interface is an OPC interface (Col 2, Lines 14-25), as that allows devices made by different manufacturers to communicate with one another and interoperate to effect

decentralized control within a process (Col 2, Lines 1- 14; Lines 14-25). It would have been obvious to one of ordinary skill in the art at the time of Applicants' invention to modify the apparatus of **SA** and **BO** with the apparatus of **BR** that included the apparatus wherein the interface is an OPC interface, as that would allow devices made by different manufacturers to communicate with one another and interoperate to effect decentralized control within a process.

Applicants' Arguments

8. The applicant argues the following:

(1) Bowling does not disclose or suggest placing the configuration specification (used to create the control modules run by the controller application) in the same simulation computer as controller application; Bowling does not disclose or suggest a configuration design and a simulation system that can be run on a single computer;

(2) Bowling does not disclose or suggest that it is even possible to provide a combined design and simulation environment in which controller software can be created and tested on a single computer;

(3) Bowling does not provide any suggestion or reason for adding configuration application to a simulation system; and

(4) Bowling does not disclose or suggest a single MMI that can communicate with a controller application and display information sent from a further controller.

Examiner's reply

9. As per the applicants' arguments, the applicants' attention is requested to the corresponding claim rejections. In addition, the following explanation is provided to further explain the examiner's position.

9.1 As per the applicants' argument that "Bowling does not disclose or suggest placing the configuration specification (used to create the control modules run by the controller application) in the same simulation computer as controller application; Bowling does not disclose or suggest a configuration design and a simulation system that can be run on a single computer", the examiner respectfully disagrees. Bowling uses the device controller simulator, a single computer to design, test and verify control system strategies in a comprehensive manner (Abstract; Page 4, Para 3; Fig 3, Block 305) and the control software is modified and tested in a non-real time environment (Page 1, Para 1).

9.2 As per the applicants' argument that "Bowling does not disclose or suggest that it is even possible to provide a combined design and simulation environment in which controller software can be created and tested on a single computer", the examiner requests the applicants' attention to Paragraph 9.1 above.

9.3 As per the applicants' argument that "Bowling does not provide any suggestion or reason for adding configuration application to a simulation system", the examiner respectfully disagrees. Bowling uses the device controller simulator, a single computer to design, test and

verify control system strategies in a comprehensive manner (Abstract; Page 4, Para 3; Fig 3, Block 305) and the control software is modified and tested in a non-real time environment (Page 1, Para 1). It would be obvious to one of ordinary skill in the art to use the same computer to design and simulate the control algorithms, as these are sequential functions that could be performed on the same computer thus avoiding the need for separate computers.

9.4 As per the applicants' argument that "Bowling does not disclose or suggest a single MMI that can communicate with a controller application and display information sent from a further controller", the examiner respectfully disagrees. Bowling uses the device controller simulator, a single computer to design, test and verify control system strategies in a comprehensive manner (Abstract; Page 4, Para 3; Fig 3, Block 305). Bowling also uses a single MMI (Fig. 3, Item 355) connected to the device controller simulator, to monitor the simulator function and provide graphical interface to the user (Page 9, Para 3). Bowling does not teach communicating with a further controller. However, Brown (BR) teaches communicating with a further controller (Col 2, Lines 14-25), as that allows devices made by different manufacturers to interoperate and the process control industry to decentralize process control and simplify the distributed control systems (Col 2, Lines 1- 14; Lines 14-25). It would have been obvious to one of ordinary skill in the art that when the further controller was simulated, its simulation model would be located in the same computer as other controller software, as the simulation involved non-real time operation. So the same MMI would be used to display information received from the other controller by the controller application that simulated the distributed control functions. Even if the further controller function was simulated by a separate simulator, it would have to interact

with the plant model and the controllers in the device controller simulator (Fig. 3, Item 305). So all the information from the further controller would be available to the device controller simulator and it would be accessed and displayed by the MMI (Item 355). The motivation for use of a single MMI is that it is easy to use and less expensive than to use multiple MMI.

Conclusion

ACTION IS FINAL

10. Applicants' arguments with respect to claim rejections under 35 USC § 103 (a) are not persuasive. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dr. Kandasamy Thangavelu whose telephone number is

703-305-0043. The examiner can normally be reached on Monday through Friday from 8:00 AM to 5:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kevin Teska, can be reached on (703) 305-9704. The fax phone number for the organization where this application or proceeding is assigned is 703-746-7329.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-305-9600.

K. Thangavelu
Art Unit 2123
July 31, 2003

KEVIN J. TESKA
SUPERVISORY
PATENT EXAMINER